

A NEW SPECIES OF *NEOCHOERUS* (RODENTIA:
HYDROCHOERIDAE) FROM THE BLANCAN
(LATE PLIOCENE) OF NORTH AMERICA

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Abstract.—*Nechoerus dichroplax*, a new species of hydrochoerid from the Blancan of Arizona and Florida is described. This description extends the stratigraphic range of the genus into the Blancan (late Pliocene) of North America. *Nechoerus dichroplax* differs from other *Nechoerus* species in the presence of bifurcations in the second to ninth or eleventh plates of the M³.

The family Hydrochoeridae is represented today only by one or two species of *Hydrochoerus*, the capybaras, which are the largest living rodents. In the fossil record of South America, however, the family is represented by more than fifteen genera ranging from Oligocene to Recent time (Hartenberger 1975, Mones 1975). In North America two genera of hydrochoerids, *Hydrochoerus* and *Nechoerus*, are known from Pleistocene localities in Texas, South Carolina, Florida, and the Lake Chapala region of Mexico (Hay 1926, Simpson 1930, Lance 1966). At present, *Hydrochoerus* ranges from Panama east of the Canal Zone southward into South America, east of the Andes to the mouth of the Rio Parana (Anderson and Jones 1967, Mones 1973).

In North American Pleistocene localities *Nechoerus*, the extinct giant capybara, is represented by a single species, *Nechoerus pinckneyi* (Hay). Five other species, *N. magnus*, *robustus*, *siraskae*, *sulcidens* and *tarijensis*, are known from Central and South America (Mones 1975). These giant forms closely resemble the living species of capybara, *Hydrochoerus hydrochaeris*, with the following differences: larger size, two to four additional laminae in M³, and the masseteric ridge extending farther anteriorly on the mandible (Hay 1926).

The material described here extends the stratigraphic range of *Nechoerus* into the Blancan (late Pliocene) and thus includes the earliest records for the family in North America. It also extends the geographic range of the genus into southeastern Arizona, where it occurs at the 111 Ranch and Dry Mountain localities in Graham County (see Hypodigm for more complete locality data). The other records reported here are from Florida at Sommer's Pit in Sarasota County and Mule Pen Quarry in Collier County. A late Blancan (late Pliocene) age has been established for each of these localities

based upon the associated vertebrate material (Downey 1962, Lindsay and Tessman 1974, Waldrop, pers. comm.).

Dental terminology used is a simplification of that of Kraglievich (1930) and Rusconi (1939).

Order Rodentia
Family Hydrochoeridae
Neochoeus dichroplax, new species
Figs. 1 and 2

Holotype.—F:AM 107691, left M², M³, Dry Mountain locality, NW ¼ of SW ¼ of SE ¼, sect. 33, T. 8 S., R. 28 E., San Simon Creek drainage system, 20 miles southeast of Safford, Graham County, Arizona.

Age and distribution.—Late Blancan of Arizona and Florida.

Diagnosis.—M³ with bifurcations in second to ninth or eleventh laminae. M³ composed of fifteen or sixteen laminae. P₄ with prisms I, II and III united; prism II with three internal edges and one external edge.

Hypodigm.—Dry Mountain locality, NW ¼ of SW ¼ of SE ¼, sect. 33, T. 8 S., R. 28 E., San Simon Creek drainage system, 20 miles southeast of Safford, Graham County, Arizona: F:AM 107680, crushed skull with crushed left and right P⁴–M³; F:AM 107698, crushed skull with partial left and right M³; F:AM 107692, partial palate with left P⁴–M³ and right P⁴, M¹ and M³; F:AM 107694, left M¹, M² and partial M³ in partial maxilla and right P⁴–M²; F:AM 107682, maxillary fragments with left M² and M³; F:AM 107695, maxillary fragment with left M³; F:AM 107693, partial left dentary with P₄–M₂; F:AM 107690, partial left dentary with partial incisor; F:AM 107686, partial dentary with P₄; F:AM 107685 and 107688, partial left dentaries; F:AM 107684, partial right dentary, P₄ and fragment of M₃; F:AM 107699, right M₁ with dentary fragments; F:AM 107697, right P₄ with dentary fragments.

111 Ranch, 15 miles southeast of Safford, Graham County, Arizona: UALP 1183, crushed skull with right P⁴–M³ and left P⁴, M¹ and M³; UALP 1191, partial maxilla with right M³; UALP 1153 and 1167a, left M³; UALP 1157, right M³; UALP 1158, partial left dentary with P₄–M₃; UALP 1186, partial left dentary with P₄ and M₁; UALP 1151, partial left dentary with I and P₄; UALP 1222, mandible with left P₄; UALP 74, partial right dentary with P₄; UALP 1170, mandible with left P₄–M₃ and right P₄–M₂; UALP 1225, left M₃; UALP 1666, right M³, partial left M₁; UALP 1168, fragments of right M³, M₁ and M₂.

Sommer's Pit, Sarasota County, Florida: TRO 550, partial right M³; TRO 1451, 1452, 1453, and 1454, partial left M³s; TRO 1455, partial right M³; TRO 1456 and 1457, left M₃s; TRO 1458, right M₁; TRO 1459 and 1460, left

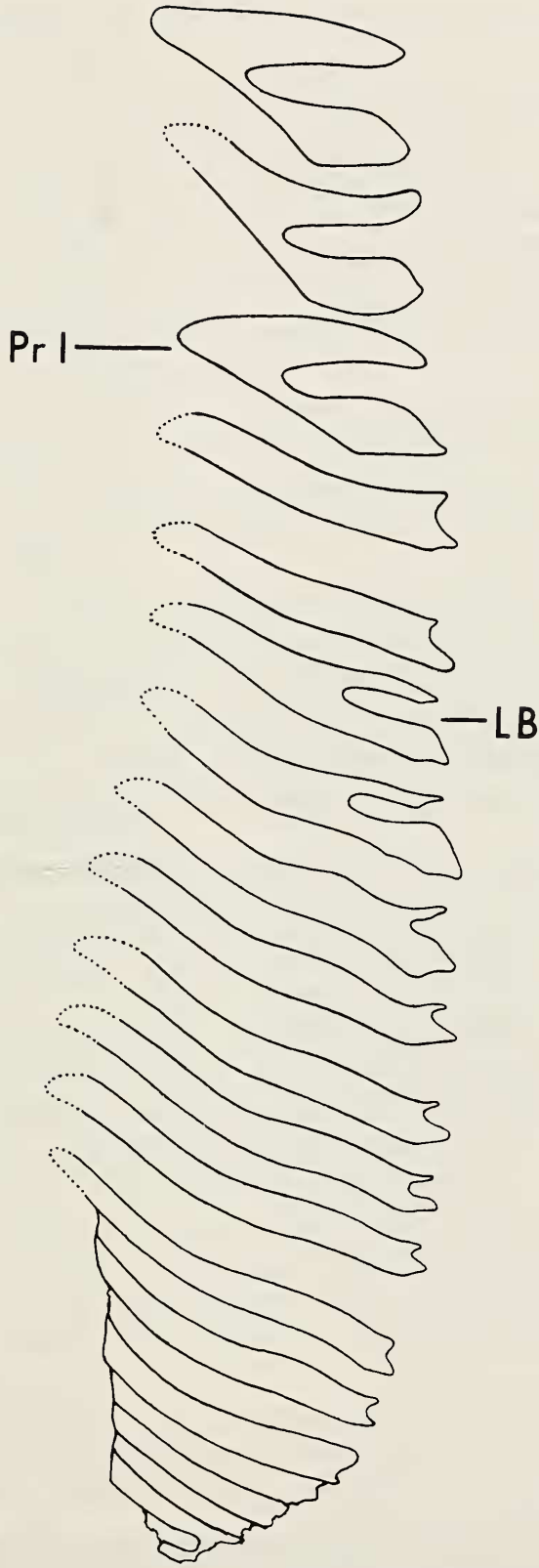


Fig. 1. *Nechoerus dichroplax*. F:AM 107691, left M² and M³, holotype. Labial to right, anterior to top. Pr I, prism I; LB, labial bifurcation.

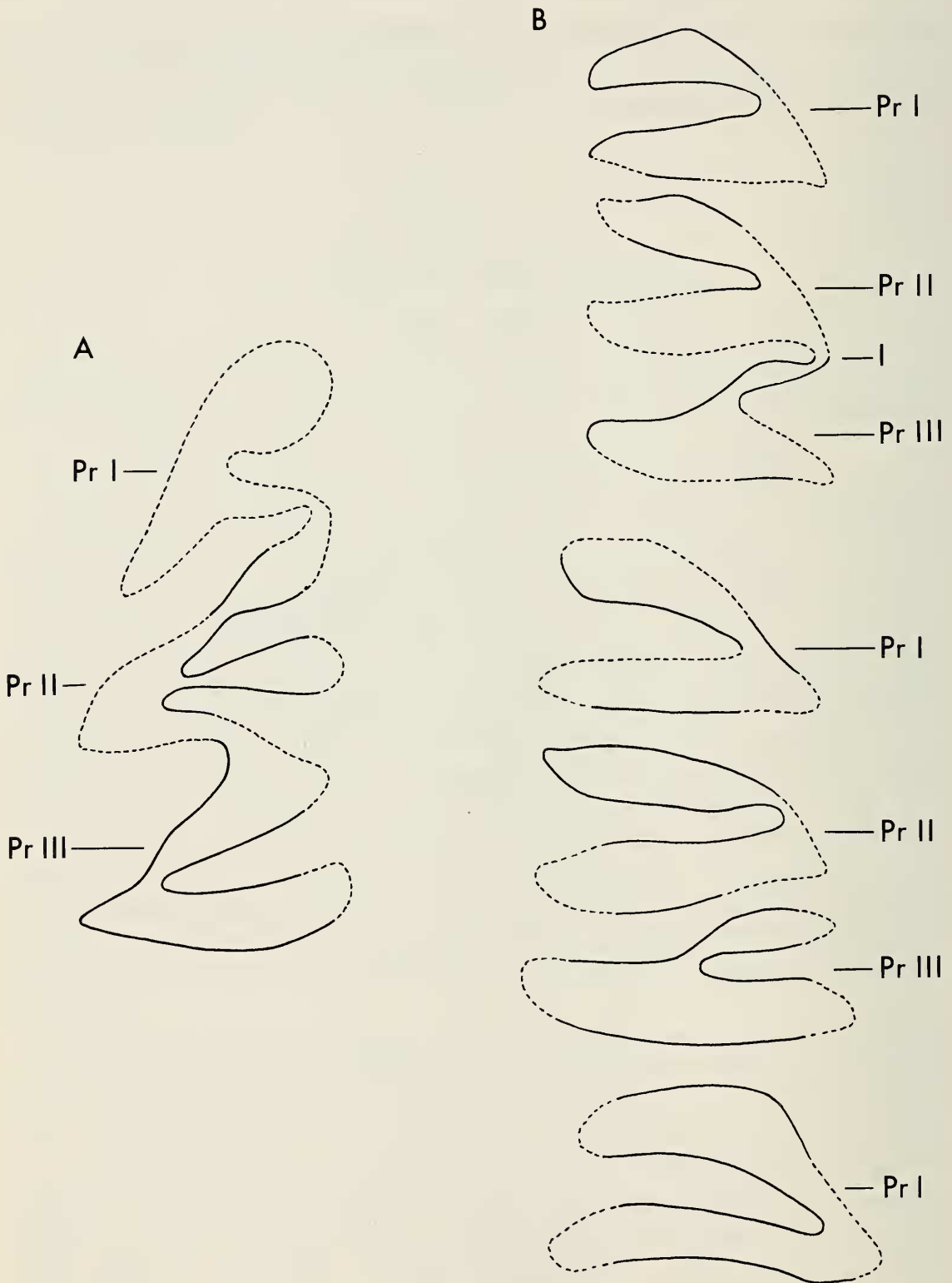


Fig. 2. *Nechoerus dichroplax*. A, F:AM 107686, left P₄. Labial to left, anterior to top. Pr I, prism I; Pr II, prism II; Pr III, prism III. B, F:AM 107693, right M₁, M₂ and partial M₃. Labial to right, anterior to top. I, enamel ithmus; Pr designations as in A.

M₁s; TRO 1461, partial right M₃; TRO 1462, partial left M₂; TRO 1463, partial right dentary with P₄.

Mule Pen Quarry, Collier County, Florida: TRO 1464, partial right M³; TRO 1465, partial left M³; TRO 1466, partial right M₁.

Description.—P⁴ does not differ in shape from that of other North American hydrochoerids. It is made up of two isolated prisms with the laminae of the first wider anteroposteriorly than those of the second prism. The second prism is slightly concave on the anterior side. Each of the two prisms is V-shaped in cross-section with the fissure opening labially and directed somewhat toward the posterior lamina.

M¹ is composed of two nearly identical isolated prisms with V-shaped cross-sections. The anterior face of the second prism is very slightly concave giving it a less well developed appearance than the first prism.

M² resembles M¹, except that it has a deeper concavity on the anterior face of the second prism.

M³ is composed of fifteen to sixteen laminae. The first is a prism of V-shaped cross-section that resembles the first prism of M¹. The next eight to ten laminae have bifurcations on their labial sides. The depths of the bifurcations range from slight indentations to deep fissures extending one-fourth of the width of the lamina. The remaining laminae are simple, with no bifurcations. In general, the laminae are set at an oblique angle to the longitudinal axis of the tooth.

The lower incisors are roughly triangular in cross-section with a shallow longitudinal sulcus on the labial face. The incisor extends posteriorly approximately to the end of P₄. In most specimens of *Nechoerus* and *Hydrochoerus* it extends to this point, but may reach to M₁.

P₄ is composed of three prisms, united at their lingual edges. These are three labial and five lingual angles. The anterior prism contains a fissure extending less than half the width of the tooth. The middle prism is V-shaped in cross-section with an additional column in the center of the V. The fissures on either side of the center column extend half the width of the tooth. The third prism is a single V-shape in cross-section with the fissure extending approximately two-thirds the width of the tooth. In the Arizona specimens, the second and third prisms share a broad connection. Specimens from Florida have the third prism connected lingually to the second by only a thin band of enamel.

M₁ is composed of three prisms. The first prism is separate from the second. The second and third prisms are united labially by a band of enamel and dentine. The first prism is V-shaped in cross-section with the fissure extending anterolingually more than two-thirds the width of the tooth. The second prism resembles the first except that it has a posterolingual connection with the third prism. The third prism is Y-shaped in cross-section with

a labial opening and the base directed toward the anterior lamina of the prism.

M_2 is composed of three isolated prisms. The first two prisms are identical. They are V-shaped in cross-section with lingual openings and the fissure extends nearly the full width of the tooth. The third prism is Y-shaped in cross-section. The opening is on its labial side and extends halfway across the tooth. The anterior face of this prism is concave lingually, convex labially.

M_3 is composed of three prisms. The first is V-shaped in cross-section with the fissure opening lingually and directed toward the anterior lamina. The second prism consists of two isolated laminae. In the Arizona specimens, the third prism is V-shaped in cross-section with the fissure opening labially. In the Florida specimens it is Y-shaped in cross-section with the fissure extending only one-third the width of the tooth.

Comparisons.—*Nechoerus dichroplax* differs from the other known species of *Nechoerus* in having bifurcated laminae in M^3 . M^3 is composed of fifteen or sixteen laminae. *Nechoerus* shows a range of 14–15 laminae in *N. tarijensis* and *N. magnus* to 15–17 in *N. pinckneyi* (Hoffstetter 1952).

In P_4 of *N. dichroplax*, as in *N. tarijensis*, the second labial fissure is directed between the second and third prisms of the tooth. This differs from *N. pinckneyi* in Florida and *N. magnus*, *siraskae* and *sulcidens* in South America in which the fissure is shifted forward to lie in front of the third lingual fissure (Rusconi 1939). *N. dichroplax* also differs from all other known species of *Nechoerus* in having a reduced connection between the first and second prisms of P_4 .

Etymology.—*Dikros* (Greek), forked, and *-plax* (Greek), plate, for the bifurcated plates in M^3 .

Discussion.—The large sample of teeth and partial jaws of *Nechoerus dichroplax* from Dry Mountain and 111 Ranch provides a range of individuals from immature to large adults. The immature individuals can be identified by their smaller size and the presence of a thin enamel band connecting the laminae of M^3 on the labial surface. Mones (1975) correlates such connections with immaturity in recent capybaras from Uruguay.

In this ontogenetically diverse sample the diagnostic dental characters of *N. dichroplax* can be seen at all developmental stages. For example, labial bifurcations are well developed on F:AM 107692, a partial palate of an immature individual. In M^3 of this specimen, a thin band of enamel connects five of the posterior laminae on the labial surface. Labial bifurcations can be seen in laminae two through eleven of the tooth.

One important distinction between *Nechoerus* and *Hydrochoerus* is the extent of the masseteric ridge on the lateral side of the mandible. The ridge forms a bony shelf for insertion of portions of the masseter muscle. It begins at the condyloid process and in *N. dichroplax* ends at the third prism of P_4 .

This places the anterior portion of the masseteric fossa at the rear of P_4 . In other species of *Nechoerus* the ridge extends to approximately the same level. In *Hydrochoerus*, by contrast, the ridge extends to the middle of P_4 , thus placing the anterior portion of the fossa farther forward (Hay 1926). This shift must have important functional consequences as it shifts the most effective forces of the masseter muscle forward during the power stroke of mastication.

Nechoerus is larger than *Hydrochoerus* and has more laminae in M^3 —14–17 in *Nechoerus* versus 12–13 in *Hydrochoerus* (Hoffstetter 1952, Pascual 1967).

The description of *N. dichroplax* as a late Blancan (late Pliocene) species of *Nechoerus* raises questions concerning the ancestry of the genus. Presumably, *Nechoerus* represents a progressive lineage which shared a common ancestry with *Hydrochoerus*. The oldest *Hydrochoerus* presently recognized are *H. ballesterensis* and *H. gracilis* from the "Puelchense" Formation of Uquian Age (Early Pleistocene) of Villa Ballester, Argentina (Mones 1975). This paper documents the oldest North American records of *Nechoerus*, in southeastern Arizona and central Florida. *Nechoerus* is known from Pleistocene localities as far south as Argentina (Mones 1975); therefore it is probable that its late Pliocene-early Pleistocene range was much greater than is presently documented.

The presence of *N. dichroplax* in southeastern Arizona and central Florida during the late Pliocene is additional evidence for a Plio-Pleistocene Middle American savanna fauna extending around the Gulf of Mexico and through Central America (Webb 1978). Such a fauna must also have extended west into southeastern Arizona. By early Pleistocene time, in North America, the western limit of the savanna fauna may have been restricted as seen by the western limit of *Nechoerus* in Texas (Hay 1926) and Mexico (Lance 1966). On the east coast of North America the northern limit was extended to the Ashley River, South Carolina (Hay 1923, 1926).

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